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Claims:

1. A process for producing bimodal low-density ethylene copolymers suitable for film preparation, the process comprising:

5 (i) subjecting ethylene, hydrogen and comonomers to a first polymerisation or copolymerisation reaction in the presence of the polymerisation catalyst in a first reaction zone in a loop reactor to produce a first polymerisation product having a low molecular weight with a melt flow rate MFR_2 of 50 to 500 g/10 min, preferably of 100 to 400 g/10 min and a density of 940 to 955 kg/m³, preferably 945 to 953 kg/m³;

10 (ii) recovering the first polymerisation product from the first reaction zone;

(iii) feeding the first polymerisation product to a second reaction zone in a gas phase reactor;

15 (iv) feeding additional ethylene, comonomers and optionally hydrogen to the second reaction zone;

(v) subjecting the additional ethylene and additional monomer(s) and optionally hydrogen to a second polymerisation reaction in the presence of the said polymerisation catalyst and the first polymerisation product;

20 (vi) to produce a polymer composition comprising from 41 to 48 % by weight of the low molecular weight polymer produced in step (i), and from 59 to 52 % by weight of the high molecular weight polymer produced in step (v), and

(vii) the bimodal low-density ethylene copolymer has a melt flow rate in the range MFR_2 of 0.4 to 1.0 g/10 min g/10 min, preferably 0.4 to 0.7 g/10 min and a density of 918 to 925 kg/m³, and

25 (viii) recovering the combined polymerisation product from the second reaction zone.

2. A process according to Claim 1, wherein the said polymerisation catalyst has been prepared by contacting a particulate support material with (i) an alkyl aluminium chloride compound; (ii) a reaction product of magnesium alkyl and an alcohol selected from linear and branched alcohols containing 6 to 16 carbon atoms, and (iii) a chlorine containing titanium compound.

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3. A process according to Claim 2, wherein the particulate support material has a volume average particle size of 15-30 μm .

5 4. A process according to Claims 2 or 3, wherein the particulate support material is silica.

10 5. A process for preparing a polymer film, comprising the steps of: (i) manufacturing the polymer according to Claim 1; (ii) optionally mixing the polymer with additives; (iii) optionally, extruding the polymer into pellets, and (iv) extruding the polymer composition into a film.

6. A process according to Claim 5, wherein the film is prepared by blowing.

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7. A film made of linear low-density polyethylene, which polyethylene comprises

(i) a low molecular weight component with a melt flow rate MFR_2 of 50 to 500 g/10 min, preferably of 100 to 400 g/10 min and a density of 940 to 955 kg/m^3 , preferably 945 to 953 kg/m^3 , and

20 (ii) a high molecular weight component having a higher molecular weight, a lower melt flow rate and a lower density than the low molecular weight component (i), so that the polymer composition comprises from 41 to 48 % by weight of the low molecular weight component (i), and from 59 to 52 % by weight of the high molecular weight component (ii), and the composition has a melt flow rate MFR_2 in the range 0.4 to 1.0 g/10 min g/10 min, preferably 0.4 to 0.7 g/10 min and a density of 918 to 925 kg/m^3 wherein said film has no gels having a size greater than 0.4 mm.

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8. A film according to claim 7, wherein the film has dart drop of at least 100 grams, tear strength in machine direction of at least 1.5 N and tear strength in transverse direction of at least 6 N.

5 9. A film according to Claim 8, wherein the film has dart drop of at least 150 grams, tear strength in machine direction of at least 2.0 N and tear strength in transverse direction of at least 7.5 N.

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